

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (currently amended) A method for estimating a cost of a product, comprising steps of:

retrieving and displaying cost factor data of the product, which include cost factors and values of the cost factors, the cost factor data of the product being displayed in a modifiable manner, the cost factor data of the product including at least one of geometrical data and attribute data of the product both contained in design data of the product produced by a CAD system, the geometrical data including at least one of dimensions, surface area and volume of the product, and the attribute data including at least product material name;

acquiring at least one of the values of the cost factors by an automatic data acquisition feature of the CAD system through operation of the CAD system conducted by an operator; and

computing cost of the product based on the cost factor data; and displaying the computed cost of the product.

2. (original) The method as in claim 1, wherein:

the acquiring step includes an input operation on a displayed three-dimensional CAD screen so that the at least one of the values of the cost factors is

computed automatically and set in a corresponding displayed cost factor value input field.

3. (original) The method as in claim 1, wherein:

the dimensions in the cost factors include width, length and height of the product; and

the acquiring step automatically computes, when x, y and z axes of the product displayed on a three-dimensional CAD screen are changed, a value of the width, a value of the length and a value of the height of the product based on the changes and are renewed.

4. (original) The method as in claim 2, wherein:

the dimensions in the cost factors further include wall thickness of the product; and

the acquiring step selects a couple of points on the product being displayed by a pointing device to set a value of the wall thickness of the product, and automatically computes the value of the wall thickness between the points and automatically sets the same in a displayed wall thickness value input field.

5. (original) The method as in claim 1, wherein:

each manufacturing step of the product is predicted based on the cost factor data of the manufacturing step specified by the operator, a manufacturing step database and manufacturing step prediction rules; and

the cost is computed based on the each predicted manufacturing step.

6. (original) The method as in claim 1, wherein:

the cost factor data are retrievably stored in a storage device.

7. (currently amended) A cost estimation apparatus for estimating a cost of a product comprising:

storage device for storing geometrical data and attribute data of the product produced by a CAD system, the geometrical data including at least one of dimensions, surface area and volume of the product, and the attribute data including at least product material name;

a first acquisition device for automatically acquiring values of cost factors of the product from the geometrical data and the attribute data stored in the storage device;

a second acquisition device for acquiring at least one of the values of the cost factors by an automatic data acquisition feature of the CAD system through operation of the CAD system conducted by an operator;

a cost computing device for computing the cost of the product based on cost factor data including the cost factors and the values of the cost factors acquired by the first and second acquisition devices; and

a display device for displaying the cost computed by the cost computing device, wherein the display device displays the values of the cost factors in a modifiable manner.

8. (original) The cost estimation apparatus as in claim 7, wherein:
the second acquisition device automatically computes and sets the at least one of the values of the cost factors in a corresponding displayed cost factor value input field, when an input operation on a displayed three-dimensional CAD screen is carried out.

9. (original) The cost estimation apparatus as in claim 7, wherein:
the dimensions include width, length and height of the product; and
the second acquisition device automatically computes and renews a value of the width, a value of the length and a value of the height of the product based on changes, when x, y and z axes of the product displayed on a three-dimensional CAD screen are changed by the operation of the CAD system by the operator.

10. (original) The cost estimation apparatus as in claim 8, wherein:
the dimensions further include wall thickness of the product; and

the second acquisition device automatically computes a value of the wall thickness between a couple of points and automatically sets the computed value of the wall thickness in a displayed wall thickness value input field, when the couple of points on the product being displayed are selected by a pointing device to set the value of the wall thickness of the product.

11. (original) The cost estimation apparatus as in claim 7 further comprising:

a cost factor specifying device for specifying the cost factor data of each manufacturing step based on an instruction of the operator; and

a manufacturing step prediction device for predicting each manufacturing step of the product based on the cost factor data of the manufacturing step specified by the cost factor specifying device, a manufacturing step database and manufacturing step prediction rules,

wherein the cost computing device computes the cost based on the each manufacturing step predicted by the manufacturing step prediction device.

12. (original) The cost estimation apparatus as in claim 7 further comprising:

a storage device for retrievably storing the cost factor data.

13. (currently amended) A cost estimation apparatus for estimating a cost of a product comprising a cost estimation application implemented in a CAD system for computing the cost based on design data of the product produced by the CAD system, wherein the cost estimation apparatus displays cost factor data of the product in a modifiable manner.

14. (original) The cost estimation apparatus as in claim 13, wherein: the cost is estimated for the product that is currently displayed on the CAD system.

15. (original) The cost estimation apparatus as in claim 13, further comprising:

a server, which has a manufacturing step prediction feature for predicting each manufacturing step of the product and a cost computation feature for computing the cost of the product.

16. (currently amended) A cost estimation apparatus for estimating a cost of a product comprising:

a CAD machine for designing the product, the CAD machine including a display device for displaying a design of the product and also design data of the product, an input device for inputting the design data and a central processing unit for processing the design data;

a design data server interconnected with the CAD machine and including a storage device for storing the design data and other data transmitted from the CAD machine, wherein the CAD machine ~~is capable of retrieving~~ retrieves the design data ~~and other data~~ from the storage device of the design data server and displays cost factor data of the product in a modifiable manner;

a cost estimation server for estimating a cost of the product, wherein the cost estimation server is interconnected with the CAD machine and includes a central processing unit for computing the cost of the product based on the cost factor data of the product upon receiving an instruction from an operator of the CAD machine through the input device and also includes a storage device for storing the cost factor data and the computed cost of the product,

wherein at least part of the cost factor data of the product is automatically acquired based on the design data by the central processing unit of the cost estimation server,

wherein the cost factor data of the product are concurrently renewed when corresponding input operation is performed on the displayed design of the product by the operator, and

wherein the computed cost of the product is transmitted from the cost estimation server to the CAD machine and is displayed on the display device of the CAD machine.

17. (currently amended) A cost estimation apparatus for estimating a cost of a product comprising:

a CAD machine for designing the product, the CAD machine including a display device for displaying a design of the product and also design data of the product, an input device for inputting the design data, a central processing unit for processing the design data and a storage device for storing the design data, wherein the CAD machine displays cost factor data of the product in a modifiable manner; and

a cost estimation server for estimating a cost of the product, wherein the cost estimation server is interconnected with the CAD machine and includes a central processing unit for computing the cost of the product based on the cost factor data of the product upon receiving an instruction from an operator of the CAD machine through the input device and also includes a storage device for storing the cost factor data and the computed cost of the product,

wherein at least part of the cost factor data of the product is automatically acquired based on the design data by the central processing unit of the cost estimation server,

wherein the cost factor data of the product are concurrently renewed when corresponding input operation is performed on the displayed design of the product by the operator, and

wherein the computed cost of the product is transmitted from the cost estimation server to the CAD machine and is displayed on the display device of

the CAD machine.

18. (new) The method as in claim 1, wherein the cost factor data of the product includes a type of manufacturing step of the product.

19. (new) The cost estimation apparatus as in claim 7, wherein the cost factors of the product include a type of manufacturing step of the product.

20. (new) The cost estimation apparatus as in claim 13, wherein the cost factor data of the product includes a type of manufacturing step of the product.

21. (new) The cost estimation apparatus as in claim 16, wherein the cost factor data of the product includes a type of manufacturing step of the product.

22. (new) The cost estimation apparatus as in claim 17, wherein the cost factor data of the product includes a type of manufacturing step of the product.